

## WHAT IS CLAIMED IS:

1. A surgical saw blade having a centrally positioned long axis comprising

a proximal end configured to couple to a surgical bone saw;

and

a distal end having at least one pair of teeth for cutting bone which are configured to be adjacent to each other wherein one of the pair of teeth is configured as a right triangle with a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis and the other of said pair of teeth is configured as a right triangle with a hypotenuse which is oriented in a direction opposite to said one of the pair of teeth and wherein the tips are arrayed substantially on a tangent perpendicular to the centrally positioned long axis, and wherein said distal end has extending from each of said pair of teeth at least one additional tooth for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are

arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

2. The surgical saw blade of claim 1 wherein said distal end has extending from each of said pair of teeth at least two additional teeth for cutting bone each of which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

3. The surgical saw blade of claim 1 wherein said distal end has extending from each of said pair of teeth at least three additional teeth for cutting bone each of which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

4. The surgical saw blade of claim 1 wherein said distal end has extending from each of said pair of teeth at least four

additional teeth for cutting bone each of which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

5. The surgical saw blade of claim 1 wherein said distal end has extending from each of said pair of teeth at least five additional teeth for cutting bone each of which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

6. A surgical saw blade for use in combination with a surgical bone saw, the surgical saw blade comprising:

a) a proximal end configured to couple to a surgical bone saw;

b) a distal end having a plurality of substantially identical teeth for cutting bone, each of the plurality of teeth ending in a tip distally; and

c) a centrally positioned long axis between the proximal end and the distal end;

wherein said distal end having a plurality of substantially identical teeth having tips for cutting bone include at least one pair of teeth for cutting bone which are configured to be adjacent to each other and positioned one at each side of the centrally positioned long axis and wherein one of the pair of teeth has a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis and the other of said pair of teeth has a hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein the tips are arrayed substantially on a tangent perpendicular to the centrally positioned long axis, and wherein said distal end has extending from each of said pair of teeth at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said

pair of teeth and wherein the tips of all of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

7. The surgical saw blade of claim 1 wherein said one of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of said at least one additional tooth being oriented in the same direction as the hypotenuse of said one of the pair of teeth and the other of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of said other of the pair of teeth being oriented in the same direction as the hypotenuse of said other of the pair of teeth and wherein the tips of all of teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

8. The surgical saw blade of claim 1 wherein said one of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least two additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least two additional teeth being oriented in the same direction as the hypotenuse of said one of the pair of teeth and the other of said pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least two additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least two additional teeth being oriented in the same direction as the hypotenuse of said other of the pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

9. The surgical saw blade of claim 1 wherein said one of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis

has extending there from at least three additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least three additional teeth being oriented in the same direction as the hypotenuse of said one of the pair of teeth and the other of said pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least three additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least three additional teeth being oriented in the same as the hypotenuse of said other of the pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

10. The surgical saw blade of claim 1 wherein said one of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least four additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite

the hypotenuse with the hypotenuse of each of said at least four additional teeth being oriented in the same direction as the hypotenuse of said one of the pair of teeth and the other of said pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least four additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least four additional teeth being oriented in the same direction as the hypotenuse of said other of the pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

11. The surgical saw blade of claim 1 wherein said one of the pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least five additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least five additional teeth being oriented in the same direction as the hypotenuse of said one of the pair of teeth and the other of



said pair of teeth having a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis has extending there from at least five additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with the hypotenuse of each of said at least five additional teeth being oriented in the same direction as the hypotenuse of said other of the pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

12. A surgical saw blade for penetrating bone when said surgical saw blade is operatively coupled to an oscillatory power tool, comprising:

a surgical saw blade having a proximal end and a distal end; and

said proximal end having a hub for attachment to an oscillatory power tool for driving engagement thereby;

said distal end having at least one pair of teeth having tips for cutting bone which are configured to be adjacent to each other and wherein one of the pair of teeth has a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis and the other of said pair of

teeth has a hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein the tips are arrayed substantially on a tangent perpendicular to the centrally positioned long axis, and wherein said distal end has extending from each of said pair of teeth at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of all of the teeth are configured to be placed substantially on a tangent which is perpendicular to a radial line extending from the center line of the power tool cutting axis that bisects the arc of travel within which the blade travels such that said teeth contact the bone to be cut thereby to provide better tracking of said surgical saw blade when forming a kerf in the bone, whereupon said teeth cut both progressively and sequentially as the kerf begins to form to provide faster aggressive cutting and efficient chip removal.

13. The surgical saw blade of claim 12 wherein the angle opposite each hypotenuse is greater than  $90^\circ$

14. A surgical saw blade for use in combination with a surgical bone saw, the surgical saw blade comprising:

a) a proximal end configured to couple to a surgical bone saw; and

b) a distal end having at least one pair of teeth having tips for cutting bone which are configured to be adjacent to each other and to have one of the pair of teeth configured as a right triangle with a hypotenuse which is oriented at least one of towards and away from a centrally positioned long axis extending between the proximal end and the distal end and the other of said pair of teeth wherein configured as a right triangle with a hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein said distal end has extending from each of said pair of teeth at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction of as the hypotenuse of the adjacent tooth defining

said pair of teeth, each of the plurality of teeth ending in a tip distally;

wherein the tips of all of the teeth are configured to be placed substantially on a tangent which is perpendicular to a radial line extending from the center line of the power tool cutting axis that bisects the arc of travel within which the blade travels.

15. The surgical saw blade of claim 14 wherein the number of additional teeth each extending from each of said pair of teeth are at least two additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

16. The surgical saw blade of claim 14 wherein the number of additional teeth each extending from each of said pair of teeth are at least three additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the

hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

17. The surgical saw blade of claim 14 wherein the number of additional teeth each extending from each of said pair of teeth are at least four additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

18. The surgical saw blade of claim 14 wherein the number of additional teeth each extending from each of said pair of teeth are at least five additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said

pair of teeth, and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

19. The surgical saw blade of claim 14, wherein the angle opposite each hypotenuse is greater than  $90^\circ$ .

20. In combination, a surgical bone saw and a bone saw blade comprising:

- a) an oscillatory or sagittal bone saw; and
- b) a surgical saw blade having:
  - i) a proximal end configured to couple to a surgical bone saw;
  - ii) a distal end having at least one pair of teeth having tips for cutting bone which are configured to be adjacent to each other and to have one of the pair of teeth configured as a right triangle with a hypotenuse which is oriented at least one of towards and away from a centrally positioned axis extending between the proximal end and the distal end and the other of said pair of teeth configured as a right triangle with a hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein said distal end has extending from each of said pair of teeth at least one additional tooth for cutting bone which is

substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are arrayed substantially on a tangent perpendicular to the centrally positioned axis and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis;

wherein each of the teeth are substantially identically shaped substantially as right triangles including a hypotenuse and an angle opposite the hypotenuse, wherein each hypotenuse is oriented at least one towards and away from the centrally positioned long axis, and wherein the tips are configured to be placed substantially on a tangent which is perpendicular to a radial line extending from the center line of the power tool cutting axis that bisects the arc of travel within which the blade travels and further wherein the surgical saw blade is coupled to the oscillatory or sagittal bone saw.

21. The combination of claim 20 wherein the one additional tooth is at least one tooth of a plurality of additional teeth having tips having a total number of additional teeth between at least two additional teeth and five additional teeth.

22. A surgical saw blade for penetrating bone when said surgical saw blade is operatively coupled to an oscillatory power tool, comprising:

a surgical saw blade having a proximal end and a distal end;

said proximal end having a hub for attachment to an oscillatory power tool for driving engagement thereby,

said distal end having at least one pair of teeth having tips for cutting bone which are configured to be adjacent to each other and to have one of the pair of teeth configured as a right triangle with a hypotenuse which is oriented at least one of towards and away from a centrally positioned long axis extending between the proximal end and distal end axis and the other of said pair of teeth configured as a right triangle with the hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein the tips are arrayed substantially on a tangent perpendicular to the centrally positioned long axis, and wherein said distal end has extending from each of said pair of teeth at least one additional tooth for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is



oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of all of the teeth are configured to be placed substantially on a tangent which is perpendicular to a radial line extending from the center line of the power tool cutting axis that bisects the arc of travel within which the blade travels such that said teeth contact the bone to be cut thereby to provide better tracking of said surgical saw blade when forming a kerf in the bone, whereupon said teeth cut both progressively and sequentially as the kerf begins to form to provide faster aggressive cutting and efficient chip removal.

23. The surgical saw blade of claim 22 wherein the number of additional teeth each extending from each of said pair of teeth are at least two additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

24. The surgical saw blade of claim 22 wherein the number of additional teeth each extending from each of said pair of teeth are at least three additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

25. The surgical saw blade of claim 22 wherein the number of additional teeth each extending from each of said pair of teeth are at least four additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

26. The surgical saw blade of claim 22 wherein the number of additional teeth each extending from each of said pair of teeth are at least five additional teeth having tips for cutting bone which are substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the as the hypotenuse of the adjacent tooth defining said pair of teeth, and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis.

27. A surgical saw blade for penetrating bone when said surgical saw blade is operatively coupled to an oscillatory power tool, comprising:

a surgical saw blade having a proximal end and a distal end;

said proximal end having a hub for attachment to an oscillatory power tool for driving engagement thereby;

said distal end having a plurality substantially identically shaped cutting teeth ending in a distal tip configured to be placed substantially on a tangent which is perpendicular to a radial line extending from the center line of the power tool cutting axis that bisects the arc of travel

within which the blade travels such that said teeth contact the bone to be cut thereby to provide better tracking of said surgical saw blade when forming a kerf in the bone, whereupon said teeth cut both progressively and sequentially as the kerf begins to form to provide faster aggressive cutting and efficient chip removal; and

a lubricious coating material having a Rockwell hardness of about 65 to about 90 being applied to the outer surface of the surgical saw blade.

28. The surgical saw blade of claim 27 wherein the coefficient of friction of the lubricious coating material is in the range of about 0.08 to about 0.25.

29. The surgical saw blade of claim 27 wherein the lubricious coating material is selected from a group consisting of Composite Diamond, a Teflon/Nickel Composite, an Inorganic Powder/Nickel, a Fluoropolymer, a Fusion bonded fluoropoly, a Thermal Spray Polymer, a PVD Matrix, polytetrafluoroethylene, Fluorinated Ethylene Propylene, Perfluoroalkoxy, Ethylene/Tetrafluoroethylene Copolymer and Anti-microbial Material.

30. A method of cutting bone comprising the steps of:

a) providing a surgical saw blade according to claim 1;

- b) coupling the saw blade to a surgical saw;
  - c) actuating the surgical saw with the coupled saw blade;
- and
- d) cutting the bone.

31. The method of claim 30 wherein the surgical saw blade provided in step a) wherein the additional number of teeth of the saw blade provided in step a) are at least two additional teeth having tips.

32. The method of claim 30 wherein the surgical saw blade provided in step a) wherein the additional number of teeth of the saw blade provided in step a) are between at least two additional teeth having tips and five additional teeth having tips.

33. The method of claim 30, wherein the angle opposite each hypotenuse of the teeth provided in step a) is greater than  $90^{\circ}$ .

34. A method of cutting bone comprising the steps of:

- a) providing a surgical saw blade having a proximal end configured to couple to a surgical bone saw, a distal end having a plurality of substantially identical teeth having tips for cutting bone, each of the plurality of teeth ending in a tip distally and a centrally positioned long axis between the

proximal end and the distal end and wherein said distal end a plurality of substantially identical teeth for cutting bone include at least one pair of teeth having tips for cutting bone which are configured to be adjacent to each other and wherein one of the pair of teeth has a hypotenuse which is oriented at least one of towards and away from the centrally positioned long axis and the other of said pair of teeth has a hypotenuse which is oriented in a direction opposite to the hypotenuse of said one of the pair of teeth and wherein the tips are arrayed substantially on a tangent perpendicular to the centrally positioned long axis, and wherein said distal end has extending from each of said pair of teeth at least one additional tooth having a tip for cutting bone which is substantially identically shaped as a right triangle including a hypotenuse and an angle opposite the hypotenuse with a hypotenuse which is oriented in the same direction as the hypotenuse of the adjacent tooth defining said pair of teeth and wherein the tips of the additional teeth are arrayed substantially on a tangent perpendicular to the centrally positioned long axis;

b) coupling the surgical saw blade to a surgical saw;

c) actuating the surgical saw with the coupled saw blade;

and

d) cutting the bone.

35. The method of claim 34 wherein the surgical saw blade provided in step a) wherein the additional number of teeth of the saw blade provided in step a) are at least two additional teeth having tips.

36. The method of claim 34 wherein the surgical saw blade provided in step a) wherein the additional number of teeth of the saw blade provided in step a) are between at least two additional teeth having tips and five additional teeth having tips.

37. The method of claim 34, wherein the angle opposite each hypotenuse of the teeth provided in step a) is greater than  $90^{\circ}$ .

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